



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,030	10/26/2000	Toshiaki Okuno	50212-144	4360
20277	7590	12/02/2004	EXAMINER	
MCDERMOTT WILL & EMERY LLP			SINGH, DALZID E	
600 13TH STREET, N.W.			ART UNIT	
WASHINGTON, DC 20005-3096			PAPER NUMBER	
			2633	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/696,030

Applicant(s)

OKUNO, TOSHIAKI

Examiner

Dalzid Singh

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 6,252,692) in view of Krimmel et al (US Patent No. 5,550,667).

Regarding claims 1 and 6, Roberts discloses optical transmission system, as shown in Fig. 6, comprising:

a modulation signal source (1522) for outputting modulation signals of a predetermined frequency; and,

a semiconductor laser source (1510) driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals (the laser source is driven by a tapped optical signal (tapped by 1530), which includes the modulation source signal).

a signal source for outputting signals to be transmitted, in the form of an electric signal (1558); and

an external modulator (1524) which is provided on a transmission line between said semiconductor laser source and said optical amplifier (shown in Fig. 2), which amplitude-modulates the laser light outputted from the semiconductor laser source,

Art Unit: 2633

based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

Roberts teaches the use of optical amplifier, as shown in Fig. 2, and differs from this claim in that Robert does not teach that the optical amplifier is within the optical transmitter. However, it is well known that optical amplifier can be located at various locations within the transmission system. Krimmel et al is cited to show such well known concept (see col. 4, lines 15-19). Since placement of optical amplifier within or outside the transmitter is well known, therefore it would have been obvious to an artisan of ordinary skill at the time of the invention to place the optical amplifier of Roberts within the optical transmitter as taught by Krimmel et al. One of ordinary skill in the art would have been motivated to do such in order to increase signal strength prior to transmitting the signal onto transmission lines.

Furthermore, Roberts teaches adjustment of the modulation depth (see col. 8, lines 51-60), however, Roberts does not specifically disclose that the adjustment of the modulation depth to be in the range of 60% or less. However, Roberts clearly suggests that the modulation depth is adjustable. Based on this teaching, it would have been obvious to an artisan at the time of the invention to adjust the modulation depth in the range of 60% or less. Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App D.C. 324, 135 F.2d 11, 57 USPQ 136. In

Art Unit: 2633

addition, discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 239, 618, 195 USPQ 6 (CCPA 1977); *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). See also *In re Aller*, 105 USPQ 233 (CCPA 1955) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to set the modulation depth to an optimum or workable value or range by routine experimentation.

Regarding claims 3 and 8, Roberts differs from these claims in that Roberts does not specifically disclose that the predetermined frequency is 20 kHz or less. However, since the operational frequency can be adjustable, therefore it would have been a matter of design choice to set the operating frequency in the range of 20 kHz or less. This supporting rationale is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedient known to the artisan of ordinary skill as design choice.

Regarding claims 4, 9, 13 and 17, Roberts shows the use of optical amplifier, as shown in Fig. 2, and differs from these claims in that Roberts does not specifically disclose that the optical amplifier comprises an erbium-doped optical fiber. However, in col. 1, lines 44-50, Roberts discloses a well-known usage of erbium-doped optical amplifier. Since erbium-doped optical amplifier is well known, therefore it would have been obvious to provide erbium-doped optical amplifier to the system of Roberts in order to increase signal strength. The motivation of using erbium-doped optical amplifier is to reduce cost, since regenerative circuitries are not required.

Regarding claims 5, 10, 14 and 18, as shown in Fig. 3, Roberts shows optical communication system comprising the optical transmitter (1) further comprising:

an optical transmission line (shown by the arrow) through which light signals outputted from said optical transmitter propagates; and

an optical receiver for receiving said light signals having propagated through said optical transmission line.

Regarding claims 11 and 15, Roberts disclose optical transmission system, as shown in Fig. 6, comprising:

a semiconductor laser source (1510) driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals (the laser source is driven by a tapped optical signal (tapped by 1530), which includes the modulation source signal);

a signal source for outputting signals to be transmitted, in the form of an electric signal (1558); and

an external modulator (1524) which is provided on a transmission line between said semiconductor laser source and said optical amplifier (shown in Fig. 2), which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

Roberts teaches the use of optical amplifier, as shown in Fig. 2, and differs from this claim in that Robert does not teach that the optical amplifier is within the optical transmitter. However, it is well known that optical amplifier can be located at various

Art Unit: 2633

locations within the transmission system. Krimmel et al is cited to show such well known concept (see col. 4, lines 15-19). Since placement of optical amplifier within or outside the transmitter is well known, therefore it would have been obvious to an artisan of ordinary skill at the time of the invention to place the optical amplifier of Roberts within the optical transmitter as taught by Krimmel et al. One of ordinary skill in the art would have been motivated to do such in order to increase signal strength prior to transmitting the signal onto transmission lines;

Roberts teaches adjustment of the modulation depth (see col. 8, lines 51-60), however, Roberts does not specifically disclose that the adjustment of the modulation depth to be 10% or less. However, Roberts clearly suggests that the modulation depth is adjustable. Based on this teaching, it would have been obvious to an artisan at the time of the invention to adjust the modulation depth in the range of 60% or less.

Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

*In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App D.C. 324, 135 F.2d 11, 57 USPQ 136. In addition, discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 239, 618, 195 USPQ 6 (CCPA 1977); *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). See also *In re Aller*, 105 USPQ 233 (CCPA 1955) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 2633

Therefore, it would have been obvious to set the modulation depth to an optimum or workable value or range by routine experimentation.

Furthermore, Roberts differs from these claims in that Roberts does not specifically disclose that the predetermined frequency not more than 20 kHz. However, since the operational frequency can be adjustable, therefore it would have been a matter of design choice to set the operating frequency not more than 20 kHz. This supporting rationale is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedient known to the artisan of ordinary skill as design choice.

### ***Response to Arguments***

3. Applicant's arguments filed 29 June 2004 have been fully considered but they are not persuasive.

On page 8 of the "Remarks" applicant indicated that the identification of the encoder (1522) of Roberts as corresponding to the claimed "modulation signal source" is incorrect. In col. 7, lines 67 to col. 8, line 1, Roberts discloses modulation arrangement in form of a line encoder (1522). The encoder (1522) provides modulation signal, therefore it is considered as "modulation signal source". Based on this, the identification of the encoder (1522) of Roberts as corresponding to the claimed "modulation signal source" is correct.

On pages 8-9 of the "Remarks" applicant indicated that the amplifier of Roberts is in-line amplifier and different than the claimed optical amplifier, which is a booster



Art Unit: 2633

amplifier. Roberts disclosed optical amplifier, which amplifies the modulated optical signal. As shown in Figs. 6A-6C and Figs. 7A-7C, of applicant's disclosure, the optical amplifier amplifies the modulated optical signal. Therefore, since the optical amplifier of Roberts performs the same function as that of claimed optical amplifier, it would be obvious that the optical amplifiers of Roberts is the same as optical amplifier in the claims. It is noted that the independent claims 2, 7, 12 and 16 does not recite "booster amplifier". Furthermore, such amplifier can be located within the transmitter or along the transmission line. Krimmel et al, a secondary reference, used in the rejection, is cited to show the teaching that optical amplifier can be located at various location of the system.

On page 9 of the "Remarks" applicant indicated that the "adjustment of modulation depth according to Roberts would be made in accordance with the specific use of the Roberts amplifier". However, as indicated in col. 8, lines 57-60, Roberts discloses that the modulation depth is adjusted by adjusting the digital code applied to the digital to analog converter. Therefore, the optical amplifier does not adjust the modulation depth but merely "boost" the power of the modulated optical signal. As disclosed in applicant's disclosure, the optical amplifier "amplifies" or "boosts" the modulated optical signal. Disclosed in the disclosure, as originally filled, there is no structure shown that the optical amplifier is "adjusting depth modulation". The optical amplifier merely amplifies the optical signal. The fact that the amplitude of the signal at the output of the amplifier is different than the amplitude of the signal at the input of the amplifier does not indicate that the amplifier adjust the modulation depth of the optical

signal. Accordingly, the references, Roberts and Krimmel et al, still read on the claimed subject matter.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272--3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2633

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS

November 22, 2004



JASON CHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600